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[Abstract]

[Problem] To improve light resistance of a diene-based rubber-modified styrene-based resin.

[Means for Solution] A light resistant rubber-modified styrenic resin composition including (A) 100 parts by weight of a diene-based rubber-modified styrene-based resin, (B) 4 to 20 parts by weight of a coloring agent (limited to an alumina-treated product when titanium oxide is used as the coloring agent), and (C) 0.4 to 5 parts by weight of a hindered amine and/or a UV absorbing agent.

[Claims]

[Claim 1] A light resistant rubber-modified styrenic resin composition comprising (A) 100 parts by weight of a diene-based rubber-modified styrene-based resin, (B) 4 to 20 parts by weight of a coloring agent (limited to an alumina-treated product when titanium oxide is used as the coloring agent), and (C) 0.4 to 5 parts by weight of a hindered amine and/or a UV absorbing agent.

[Claim 2] A resin composition as recited in claim 1, wherein a reduced viscosity  $[\eta]$  of a methyl ethyl ketone (MEK)-soluble component of the diene-based rubber-modified styrene-based resin (A) as measured in a dimethylformamide (DMF) solution at a concentration of 0.3 g/100 mL at 30°C is

0.45 to 2 dL/g.

[Claim 3] A resin composition as recited in claim 1, wherein the coloring agent (B) is an inorganic pigment and/or an organic pigment.

[Detailed Description of the Invention]

[0001]

[Technical Field to which the Invention Belongs]

This invention relates to a technique for improving the light resistance of a diene-based rubber-modified styrene-based resin.

[0002]

[Prior Art]

As a high impact resin, a HIPS resin and an ABS resin are known. The ABS resin which contains a butadiene-based polymer as a rubber component for imparting an impact resistance thereto is, however, apt to be deteriorated by UV rays because of the presence of chemically unstable double bonds in its main skeleton and is thus well known to have poor light resistance.

[0003]

As a method for improving the light resistance of an ABS resin, there is proposed a method in which a saturated rubbery polymer containing almost no double bonds in its main skeleton is used. One typical known method of this

type uses an acrylate rubber, particularly a butyl acrylate rubber. An AAS resin in which styrene and acrylonitrile are graft-polymerized to such a butyl acrylate-based rubber has good weatherability, mechanical strength, workability and formability, but is poor in impact property at low temperatures and in color stability during molding.

[0004]

For the purpose of improving the light resistance of an ABS resin, addition of a UV absorbing agent and a hindered amine has been proposed. This method is, however, still insufficient to meet severe requirements for light resistance because coloring occurs significantly.

[0005]

[Problems to be Solved by the Invention]

The objective problem is to improve the light resistance of a diene-based rubber-modified styrene-based resin without much reducing the mechanical strength, workability, formability, impact property at low temperatures and color stability during molding thereof.

[0006]

[Means for Solving the Problem]

The present inventors have made an earnest study with a view toward improving the light resistance of a diene-based rubber-modified styrene-based resin and have found that the light resistance of the diene-based rubber-modified

styrene-based resin can be improved without much reducing the physical properties of thereof by adding specific amounts of a coloring agent such as an inorganic pigment and/or an organic pigment as well as a hindered amine and/or a UV absorbing agent to the diene-based rubber-modified styrene-based resin, thereby arriving at the present invention.

[0007]

Thus, the present invention provides a light resistant rubber-modified styrenic resin composition comprising (A) 100 parts by weight of a diene-based rubber-modified styrene-based resin, (B) 4 to 20 parts by weight of a coloring agent (limited to an alumina-treated product when titanium oxide is used as the coloring agent), and (C) 0.4 to 5 parts by weight of a hindered amine and/or a UV absorbing agent (Claim 1); a resin composition as recited in claim 1, wherein a reduced viscosity  $[\eta]$  of a methyl ethyl ketone (MEK)-soluble component of the diene-based rubber-modified styrene-based resin (A) as measured in a dimethylformamide (DMF) solution at a concentration of 0.3 g/100 mL at 30°C is 0.45 to 2 dL/g (Claim 2); and a resin composition as recited in claim 1, wherein the coloring agent (B) is an inorganic pigment and/or an organic pigment (Claim 3).

[0008]

[Embodiments of the Invention]

A diene-based rubber-modified styrene-based resin (A) (hereinafter occasionally referred to as rubber-modified styrenic resin (A)) used in the present invention is a graft copolymer (hereinafter occasionally referred to as polymer (1)) obtained polymerizing an aromatic vinyl compound and at least one polymerizable compound selected from a cyanated vinyl compound, a maleimide-based compound and an unsaturated carboxylic acid ester in the presence of 30 to 95 % by weight, preferably 40 to 90 % by weight, of a conjugated diene-based rubber, provided that a total amount of the aromatic vinyl compound, the at least one polymerizable compound and the conjugated diene-based rubber is 100 % by weight. For the purpose of imparting moldability, stiffness, etc., the rubber-modified styrenic resin (A) may contain a separately prepared copolymer (hereinafter occasionally referred to as polymer (2)) obtained by polymerizing an aromatic vinyl compound with at least one polymerizable compound selected from a cyanated vinyl compound, a maleimide-based compound and an unsaturated carboxylic acid ester. The amounts of the polymer (1) and polymer (2) in the rubber-modified styrenic resin are preferably such that the content of the polymer (1) is 10 to 100 % by weight, more preferably 15 to 70 % by weight, while the content of the polymer (2) is 0 to 90 % by

weight, more preferably 30 to 85 % by weight. An amount of the polymer (1) less than 10 % by weight tends to cause a reduction of the impact resistance.

[0009]

The polymerizable compounds (monomer components) constituting the polymer (1) preferably have a content of the aromatic vinyl compound of 15 to 85 % by weight, more preferably 20 to 80 % by weight, from the standpoint of heat resistance. It is also preferred that the content of the at least one compound selected from a cyanated vinyl compound, a maleimide-based compound and an unsaturated carboxylic acid ester be 15 to 85 % by weight, more preferably 20 to 80 % by weight.

[0010]

The polymerizable compounds constituting the polymer (2) preferably have a content of the aromatic vinyl compound of 50 to 90 % by weight, more preferably 60 to 85 % by weight, from the standpoint of heat resistance. It is also preferred that the amount of the cyanated vinyl compound be 10 to 40 % by weight, more preferably 15 to 35 % by weight, the amount of the maleimide-based compound be 0 to 40 % by weight, more preferably 0 to 30 % by weight and the amount of the unsaturated carboxylic acid ester be 0 to 40 % by weight, more preferably 0 to 30 % by weight.

[0011]

The conjugated diene-based rubber may be a polymer containing 50 to 100 % by weight of diene-based monomer units such as butadiene and isoprene. Examples of the conjugated diene-based rubber include polybutadiene, a butadiene-styrene copolymer (SBR), a butadiene-acrylonitrile copolymer (NBR), a butadiene-butyl acrylate copolymer, a butadiene-methyl acrylate copolymer, a butadiene-ethyl acrylate copolymer, a butadiene-2-ethylhexyl acrylate copolymer, a butadiene-methyl methacrylate copolymer and a butadiene-butyl methacrylate copolymer. These polymers may be used singly or in combination of two or more thereof. Above all, polybutadiene, SBR and NBR are preferred from the standpoint of impact property at low temperatures.

[0012]

As the aromatic vinyl compound, there may be mentioned, for example, styrene,  $\alpha$ -methylstyrene, dimethylstyrene and vinyltoluene. These compounds may be used singly or in combination of two or more thereof. Among these compounds, styrene and  $\alpha$ -methylstyrene are preferred from the industrial point of view and for reasons of heat resistance.

[0013]

As the cyanated vinyl compound, there may be mentioned, for example, acrylonitrile and methacrylonitrile. These compounds may be used singly or in combination of two or more thereof. Among these compounds, acrylonitrile is

preferred from the standpoint of resistance to chemicals.

[0014]

As the maleimide-based compound, there may be mentioned, for example, maleimide, N-methylmaleimide, N-ethylmaleimide, N-propylmaleimide, N-butylmaleimide, N-phenylmaleimide and N-(p-methylphenyl)maleimide,. These compounds may be used singly or in combination of two or more thereof. Among these compounds, N-phenylmaleimide is preferred from the standpoint of heat resistance.

[0015]

As the unsaturated carboxylic acid ester, there may be mentioned, for example, methyl acrylate, ethyl acrylate, butyl acrylate, methyl methacrylate, ethyl methacrylate, butyl methacrylate, hydroxymethyl acrylate, hydroxymethyl methacrylate, hydroxypropyl methacrylate, glycidyl acrylate and glycidyl methacrylate. These compounds may be used singly or in combination of two or more thereof. Among these compounds, methyl methacrylate and glycidyl methacrylate are preferred from the standpoint light resistance.

[0016]

Polymerizable compounds other than the above-described polymerizable compounds and copolymerizable with the above-described polymerizable compounds, such as acrylic acid, methacrylic acid, maleic anhydride, vinyl acetate, vinyl



ether and isobutylene, may be copolymerized in an amount of 20 % by weight or less based on the whole polymerizable compounds (monomer components). In this case, the amounts of such "other polymerizable compounds" in the polymerizable compounds (monomer units) constituting the polymer (1) and in the polymerizable compounds constituting the polymer (2) should be each 10 % by weight or less.

[0017]

The polymerizable compounds constituting the polymer (2) should be selected with the consideration of moldability and heat resistance. The polymer (2) is preferably a styrene-acrylonitrile copolymer, an  $\alpha$ -methylstyrene-acrylonitrile copolymer, a phenylmaleimide-styrene-acrylonitrile copolymer and an  $\alpha$ -methylstyrene-styrene-acrylonitrile copolymer.

[0018]

It is preferred that the reduced viscosity  $[\eta]$  of a methyl ethyl ketone (MEK)-soluble component of the rubber-modified styrenic resin (A) as measured in a dimethylformamide (DMF) solution at a concentration of 0.3 g/100 mL at 30°C be 0.45 to 2 dL/g, more preferably 0.5 to 1 dL/g. When the reduced viscosity is less than 0.45 dL/g, the impact strength tends to decrease. When the reduced viscosity exceeds 2 dL/g, the moldability tends to be deteriorated.

[0019]

The method for producing the rubber-modified styrenic resin (A) is not specifically limited. The rubber-modified styrenic resin (A) may be produced by polymerizing a conjugated diene-based rubber with polymerizable compounds using a conventionally generally employed method. Depending upon the production method, the rubber-modified styrenic resin (A) may be obtained in the form of a latex, a slurry, a solution powder, pellets or a mixed form thereof. Recovery of a polymer from a latex of the rubber-modified styrenic resin (A) may be carried out by the ordinary method, for example, by adding an alkaline earth metal salt such as calcium chloride, magnesium chloride or magnesium sulfate, an alkali metal salt such as sodium chloride or sodium sulfate, an inorganic or organic acid such as hydrochloric acid, sulfuric acid, phosphoric acid, acid or acetic acid, to the latex for coagulating the latex, followed by dehydration and drying. A spray drying method may be used, if desired.

[0020]

In order to prepare the light resistant rubber-modified styrenic resin composition of the present invention, it is necessary to compound the coloring agent (B) in a large amount of 4 to 20 parts by weight, preferably 4 to 15 parts by weight into 100 parts by weight of the rubber-

modified styrenic resin (A). A compounding amount of less than 4 parts by weight is insufficient to improve the light resistance. Too large an amount in excess of 20 parts by weight will cause a reduction of the impact resistance.

[0021]

Materials used as the coloring agent (B) may be roughly classified into two types; inorganic pigments and organic pigments. As the main inorganic pigment, there may be mentioned oxides (such as titanium oxide, zinc oxide, iron red, synthetic iron oxide, titanium yellow, chromium oxide, cobalt blue and cobalt green), hydroxides (such as yellow iron oxide and alumina white), sulfides (such as cadmium yellow, cadmium red and vermillion), chromates (such as chrome yellow), sulfates (such as gypsum and barium sulfate), carbonates (such as calcium carbonate and white lead), silicates (such as ultramarine blue), phosphates (such as manganese violet and cobalt violet), arsenates (emerald green), ferrocyanates (iron blue) and carbon (carbon black). Titanium oxide in the above-exemplified oxides is restricted only to a surface treated product, namely alumina-treated titanium oxide. Above all, oxides and carbon are preferred for reasons of excellent effect of improving light resistance and from the standpoint of coloring efficiency and heat resistance.

[0022]

As the main organic pigment, there may be mentioned azo pigments (monoazo lake, monoazo, diazo, condensed polyzo and metal complex azo pigments), phthalocyanines (such as copper phthalocyanine, porphyrin, tetraazaporphyrin, chlorophyll a, and haemin), and condensed polycyclic pigments (such as perylene, perinone, anthraquinone, quinoline and quinacridone). Above all, phthalocyanine and condensed polycyclic pigments are preferred for reasons of excellent effect of improving light resistance and from the standpoint of coloring efficiency and heat resistance.

[0023]

The above coloring agents may be used singly or in combination of two or more thereof. In order to improve the light resistance, the organic pigment must be selected with consideration of the heat resistance and the light resistance of the organic pigment per se.

[0024]

In order to prepare the light resistant rubber-modified styrenic resin composition of the present invention, it is necessary to add the hindered amine and/or UV absorbing agent (C) in an amount of 0.4 to 5 parts by weight, preferably 0.4 to 3 parts by weight into 100 parts by weight of the rubber-modified styrenic resin (A). An addition amount of less than 0.4 part by weight is insufficient to improve the light resistance. Too large an amount in excess

of 5 parts by weight will cause a reduction of the impact resistance.

[0025]

As the hindered amine, there may be mentioned, for example, bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate, bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate, 1,2,3,4-tetrakis(2,2,6,6-tetramethyl-4-piperidyloxycarbonyl)butane, 1,2,3,4-tetrakis(1,2,2,6,6-pentamethyl-4-piperidyloxycarbonyl)butane, dimethyl succinate-1-(2-hydroxyethyl)-4-hydroxy-2,2,6,6-tetramethylpiperidine condensation product, bis(1,2,2,6,6-pentamethyl-4-piperidyl) 2-(3,5-di-tert-butyl-4-hydroxybenzyl)-2-butyronate, a polycondensate of 1,2,3,4-butanetetracarboxylic acid, 1,2,2,6,6-pentamethyl-4-piperidinol and 3,9-bis(2-hydroxy-1,1-dimethylethyl)-2,4,8,10-tetraoxospiro[5,5]undecane, 1-(3,5-di-tert-butyl-4-hydroxyphenyl)-1,1-bis(2,2,6,6-tetramethyl-4-piperidyloxycarbonyl)pentane, 1-[2-[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionyloxy]ethyl]-4-[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionyloxy]-2,2,6,6-tetramethylpiperidine, a condensate of N,N-bis(3-aminopropyl)ethylenediamine and 2,4-bis[N-butyl-N-(1,2,2,6,6-pentamethyl-4-piperidyl)amino]-6-chloro-1,3,5-triazine, 4-benzoyloxy-2,2,6,6-tetramethylpiperidine, poly[{6-(1,1,3,3-tetramethylbutyl)amino-1,3,5-triazine-2,4-diyl} {(2,2,6,6-tetramethyl-4-piperidyl)imino}-

hexamethylene{(2,2,6,6-tetramethyl-4-piperidyl)imino}} and bis(1-octyloxy-2,2,6,6-tetramethyl-4-piperidyl) sebacate.

[0026]

As the UV absorbing agent, benzotriazol compounds and triazine compounds are preferred. To be more specific, there may be mentioned 2-(5-methyl-2-hydroxyphenyl)benzotriazol, 2-[2-hydroxy-3,5-bis( $\alpha$ , $\alpha$ -dimethylbenzyl)phenyl]-2H-benzotriazol, 2-(3,5-di-tert-butyl-2-hydroxyphenyl)benzotriazol, 2-(3-tert-butyl-5-methyl-2-hydroxyphenyl)-5-chlorobenzotriazol, 2-(3,5-di-tert-butyl-2-hydroxyphenyl)-5-chlorobenzotriazol, 2-(3,5-di-tert-amyl-2-hydroxyphenyl)-5-chlorobenzotriazol, 2-(2'-hydroxy-5'-tert-octylphenyl)benzotriazol, 2-(4,6-diphenyl-1,3,5-triazine-2-yl)-5-(hexyl)oxy-phenol and 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine-2-yl)-5-(hexyl)oxy-phenol. These compounds may be used singly or in combination of two or more thereof. Among the above compounds, 2-[2-hydroxy-3,5-bis( $\alpha$ , $\alpha$ -dimethylbenzyl)phenyl]-2H-benzotriazol is preferred from the standpoint of light resistance and costs.

[0027]

The hindered amine and the UV absorbing agent may be used singly or conjointly. However, the use of hindered amine by itself is preferred from the standpoint of coloration.

[0028]

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The light resistant rubber-modified styrenic resin composition of the present invention can contain a well known additive or additives such as a stabilizer, a lubricant, an antioxidant and an antistatic agent. Particularly, a stabilizer such as a phenol-type, sulfur-type or phosphorus-type stabilizer and a lubricant such as an organosiloxane, an aliphatic hydrocarbon, a higher fatty acid ester of a higher alcohol, an amide or tallow, which are used for a styrenic resin, may be used for obtaining a high performance resin composition. The above-described stabilizers and lubricants may be each used singly or in combination of two or more thereof.

[0029]

The hindered amine, UV absorbing agent, stabilizer may be added in the form of a dispersion to the above-described resin latex or slurry.

[0030]

The light resistant rubber-modified styrenic resin composition of the present invention may be prepared by kneading the rubber-modified styrenic resin (A), coloring agent (B), hindered amine and/or UV absorbing agent (C) and, optionally, stabilizer, lubricant, etc. using a known melt kneader such as a Banbury mixer, a roll mill, a single screw extruder or a twin screw extruder.

[0031]

The light resistant rubber-modified styrenic resin composition of the present invention may be processed and molded by a known processing method such as injection molding, extrusion molding, vacuum molding or blow molding. The resin composition has excellent light resistance such that the degree of discoloration  $\Delta E$  as measured according to the method disclosed in the hereinafter described working examples using a color difference meter is less than 6, preferably less than 4 and may be used as automobile parts and construction materials produced by contour extrusion.

[0032]

[Examples]

The rubber-modified styrenic resin composition of the present invention will be next concretely described by way of examples. The present invention is not restricted to the examples in any way. Except otherwise specifically noted, "part" is "part by weight" and "%" is "% by weight".

[0033]

The abbreviations of raw materials used in Examples and Comparative Examples are as summarized below.

[0034]

St: styrene,

$\alpha$ MSt:  $\alpha$ -methylstyrene,

AN: acrylonitrile,

PMI: phenylmaleimide,



MMA: methylmethacrylate,

tDM: tert-dodecylmercaptan,

CHP: cumenehydroperoxide,

Coloring agent 1: titanium oxide (Taipek CR-60-2  
manufactured by Ishihara Sangyo Co., Ltd.)

Coloring agent 2: carbon black (#30, manufactured by  
Mitsubishi Chemical Corporation))

Coloring agent 3: red iron oxide (Toda Color 140ED,  
manufactured by Toda Kogyo Corporation)

Hindered amine 1: bis(2,2,6,6-tetramethyl-4-piperidyl)  
sebacate

Hindered amine 2: 1,2,3,4-tetrakis(2,2,6,6-pentamethyl- 4-  
piperidyloxycarbonyl)butane

UV absorbing agent 1: 2-[2-hydroxy-3,5-bis( $\alpha$ , $\alpha$ -  
dimethylbenzyl)phenyl]-2H-benzotriazol

[0035]

Synthesis of rubber-modified styrenic resin (A):

(I) Synthesis of graft copolymers (Polymer (1)) GP1 and GP2

In a reactor equipped with a stirrer and a cooler, the  
following substances were charged under a nitrogen flow:

water: 250 parts, sodium formaldehyde sulfoxylate: 0.2 part,

ferrous sulfate: 0.001 part, disodium ethylenediamine

tetraacetate: 0.005 part, sodium dodecylbenzene sulfonate:

2.0 parts, polybutadiene rubber (as solid content): 70 parts.

[0036]

The reactor was heated to 60°C under a nitrogen flow with stirring. After a temperature of 60°C had been reached, a mixture having the composition shown in Table 1 was continuously added dropwise over 4 hours. After the completion of the dropwise addition, the mixture was further stirred for 1 hour at 60°C to complete the polymerization. By the above procedures, graft copolymers GP1 and GP2 were produced. The polybutadiene used had an average particle diameter of 0.25  $\mu\text{m}$  and a gel content of 90 % and was in the form of a latex.

[0037]

[Table 1]

Table 1

Graft copolymer		GP1	GP2
Composition (part)	St	22.5 parts	15.0 parts
	AN	7.5 parts	
	MMA		15.0 parts
	CHP	0.2 part	0.2 part

[0038]

(II) Synthesis of styrenic copolymers (Polymer (2)) FP1 to FP3

In a reactor equipped with a stirrer and a cooler, the following substances were charged under a nitrogen flow:  
 water: 250 parts, sodium formaldehyde sulfoxylate: 0.5 part,  
 ferrous sulfate: 0.003 part, disodium ethylenediamine  
 tetraacetate: 0.01 part, sodium dodecylbenzenesulfonate: 2.0

parts.

[0039]

The reactor was heated to 60°C under a nitrogen flow with stirring. After a temperature of 60°C had been reached, a mixture having the composition shown in Table 2 was continuously added dropwise over 6 hours. After the completion of the dropwise addition, the mixture was further stirred for 1 hour at 60°C to complete the polymerization. By the above procedures styrenic copolymers FP1 to FP3 were produced.

[0040]

[Table 2]

Table 2

Styrenic copolymer		FP1	FP2	FP3
Composition (part)	$\alpha$ MSt	60		
	St	15	75	60
	AN	25	25	25
	PMI			15
	tDM	0.5	0.45	0.4
	CHP	0.3	0.3	0.3

[0041]

(III) Preparation of rubber-modified styrenic resins (latex blends) A1 to A4

Latexes of graft copolymers GP1 and GP2 and styrenic copolymers FP1 to FP3 obtained in (I) and (II) above were uniformly mixed to form the compositions shown in Table 3, to which a phenol-type antioxidant was added. Each of the reaction products was coagulated and thermally agglomerated,

followed by washing with water, dehydration and drying to obtain rubber-modified styrenic resins A1 to A4 each of which was a mixture of graft copolymer (GP) (Polymer (1)) and styrenic copolymer (FP) (Polymer (2)) and in the form of powder.

[0042]

A reduced viscosity  $[\eta]$  (dL/g) of a methyl ethyl ketone (MEK)-soluble component of each of the rubber-modified styrenic resins A1 to A4 was measured in a dimethylformamide (DMF) solution at a concentration of 0.3 g/100 mL at 30°C and was as shown in Table 3.

[0043]

[Table 3]

Table 3

Rubber-modified styrenic resin		A1	A2	A3	A4
Composition (part)	GP1	27 parts	27 parts	27 parts	
	GP2				27 parts
	FP1	73 parts			
	FP2 FP3		73 parts	73 parts	73 parts
Reduced viscosity (dL/g)		0.53	0.60	0.58	0.59

[0044]

Examples 1 to 9 and Comparative Examples 1 to 3

The rubber-modified styrenic resins A1 to A4 produced in (III) above, the specified coloring agents and the specified hindered amines and/or UV absorbing agent were blended to form the compositions shown in Tables 4 and 5, to

which antioxidants (0.5 part of AO-20 (manufactured by Aasahi Denka Kogyo Co., Ltd.) and 0.5 part of PEP-24G (manufactured by Aasahi Denka Kogyo Co., Ltd.)) were added. The mixture was blended using a super mixer and then pelletized using a 40 m/m extruder. The pellets were then molded using a 150TON injection molding machine at a screw revolution of 100 rpm and a nozzle set temperature of 260°C to obtain a test piece (a flat plate of 150 mm X 150 mm X 3 mm). The test piece was evaluated for its light resistance.

[0045]

The light resistance was tested using a strong energy xenon weather meter (manufactured by Suga Test Instruments Co., Ltd.) under conditions including a radiation illuminance of 162 W/m<sup>2</sup>, a black panel temperature of 89°C and an integrated radiation illuminance of 190 MJ/m<sup>2</sup> and was evaluated in terms of a degree of discoloration  $\Delta E$  using a color difference meter.

[0046]

[Table 4]

Table 4

Example No.		1	2	3	4	Comp. Ex. 1	Comp. Ex. 2
Composition (part)	Al	100	100	100	100	100	100
	Coloring agent 1	6	8	10	6	6	3
	Coloring agent 2	0.03	0.05	0.07	0.03	0.03	0.01
	Hindered amine 1	0.8	0.8	0.8			
	Hindered amine 2				0.8		1.2
	Light resistance (Discoloration degree $\Delta E$ )	5.26	3.55	2.22	2.85	8.57	7.12

[0047]

[Table 5]

Table 5

Example No.		5	6	7	8	9	Comp. Ex. 3
Composition (part)	A1				100	100	100
	A2	100					
	A3		100				
	A4			100			
	Coloring agent 1	6	6	6	6	6	
	Coloring agent 2	0.03	0.03	0.03	0.1	0.1	0.05
	Coloring agent 3				2	2	3
	Hindered amine 1						0.4
	Hindered amine 2	0.8	0.8	0.8			
	UV absorbing agent 1				0.8	1.2	
	Light resistance (Discoloration degree $\Delta E$ )	3.02	2.89	2.85	3.44	2.56	12.56

[0048]

[Effect of the Invention]

By compounding a coloring agent (B) and a hindered amine and/or a UV absorbing agent (C) into a diene-based rubber-modified styrene-based resin (A), a light resistant rubber-modified styrenic resin composition having a greatly improved light resistance can be obtained.